AF FW

Attorney's Docket No.: 42P11864 Patent

In re the Application of: Jay H. Connelly
(inventor(s))

Application No.: 09/882,105

Filed: June 15, 2001

For: A METHOD AND APPARATUS FOR PERIODICALLY DELIVERING AN OPTIMAL BATCH BROADCAST SCHEDULE BASED ON DISTRIBUTED CLIENT FEEDBACK
(title)

Mail Stop Appeal Brief - Patents
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SIR: Transmitted herewith is an **Appeal Brief** for the above-referenced application.

_____ Applicant claims small entity status. See 37 CFR 1.27.
XX **No additional claim fee is required.**
XX **A check for $340 is included for a fee in support of an appeal.**

The fee has been calculated as shown below:

	(Col. 1) Claims Remaining After Amd.		(Col. 2) Highest No. Previously Paid For	(Col. 3) Present Extra	SMALL ENTITY Rate	SMALL ENTITY Additional Fee	OTHER THAN A SMALL ENTITY Rate	OTHER THAN A SMALL ENTITY Additional Fee
Total Claims	* 56	Minus	** 56	0	X9	$	X18	$ 0
Indep. Claims	* 4	Minus	*** 4	0	X43	$	X86	$ 0
☐	**First Presentation of Multiple Dependent Claim(s)**				**+145**	**$**	**+290**	**$**
					Total Add. Fee	$	Total Add. Fee	$ 0

* If the entry in Col. 1 is less than the entry In Col. 2, write "0" in Col. 3.

** If the "Highest No. Previously Paid For" IN THIS SPACE is less than 20, write "20" in this space.

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_____ A check in the amount of $_____ is attached for presentation of additional claim(s).

_____ Applicant(s) hereby Petition(s) for an Extension of Time of _____ month(s) pursuant to 37 C.F.R. § 1.136(a).

__X__ **A check for $ 340.00 is attached for fees in support of an appeal under 37 C.F.R. § 1.192.**

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Applicant: Jay H. Connelly

Serial No.: 09/882,105

Filed: June 15, 2001

For: A METHOD AND APPARATUS FOR PERIODICALLY DELIVERING AN OPTIMAL BATCH BROADCAST SCHEDULE BASED ON DISTRIBUTED CLIENT FEEDBACK

Docket No.: 42P11864

Examiner: Chung, Jason J.

Art Unit: 2611

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

APPEAL BRIEF
37 C.F.R. § 1.192; MPEP § 1206

Sir:

This appeal brief is submitted in triplicate in support of the Notice of Appeal mailed by Applicant on August 6, 2004, for the above-noted patent application. Applicant respectfully requests consideration of this appeal and allowance of the application by the Board of Patent Appeals and Interferences.

I. REAL PARTY IN INTEREST

The real party in interest in this appeal is Intel Corporation ("Intel"), a Delaware corporation having a principal place of business at 2200 Mission College Blvd, Santa Clara, California 95052. Intel is the assignee of the entire right, title and interest in the above-noted

application by virtue of an assignment recorded at the U.S. Patent Office at Reel 011909, Frame 0756.

II. RELATED APPEALS AND INTERFERENCES

Applicant and the Applicant's legal representative know of no interferences or other appeals that will directly affect, be directly affected by, or have a bearing on the Board's decision in the pending appeal.

III. STATUS OF CLAIMS

Claims 1-56 are pending in the application and are the claims on appeal. The status of the pending claims is as follows:

(i) Independent claims 1, 26, 35, and 44 stand rejected by the Examiner under 35 U.S.C. § 103(a) as being unpatentable over Wu, WO 01/15451 A1 (hereinafter *Wu*) in view of Rao, U.S. Patent No. 6,594,826 (hereinafter *Rao*), in further view of Girard, U.S. Patent No. 5,571,282 (hereinafter *Girard*), in further view of Levitan, U.S. Patent No. 5,534,911 (hereinafter *Levitan*).

(ii) Dependent claims 2-3, 20, 27, 36, 45, 53, and 55 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Wu*, in view of *Rao*, in further view of *Girard*, in further view of *Levitan*.

(iii) Dependent claims 4, 28, 37, and 46 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Wu* in view of *Rao* in further view of *Girard* in further view of *Levitan* in further view of Katayama, U.S. Patent No. 6,349,321.

(iv) Dependent claims 5, 6, 10, 12, 13, 17, 21-25, 31, 32, 40, 41, 49, and 50 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Wu* in view of *Rao* in further view of *Girard* in further view of *Levitan* in further view of Hendricks, U.S. Patent No. 5,600,573.

(v) Dependent claims 8, 9, 11, 15, 16, 18, 19, 30, 33, 34, 39, 42, 43, 48, 51, and 52 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Wu* in view of *Rao* in further view of *Girard* in further view of *Levitan* in further view of Hendricks in further view of Graves, U.S. Patent No. 5,410,344.

(vi) Dependent claims 7 and 14 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Wu* in view of *Rao* in further view of *Girard* in further view of *Levitan* in further view of Hendricks in further view of Graves.

(vii) Dependent claims 54 and 56 are rejected under 35 U.S.C. § 103(a) as being unpatentable over *Wu* in view of *Rao* in further view of *Girard* in further view of *Levitan.*

IV. STATUS OF AMENDMENTS

Prior to the final Office Action mailed June 7, 2004, claims 1-56 were pending in the application. No amendment was made in response to the June 7, 2004 final Office Action, thus claims 1-56 remain pending in the application. A copy of all claims on appeal, as finally rejected by the Examiner on June 7, 2004, is attached hereto in the Appendix.

V. SUMMARY OF THE INVENTION

The present invention pertains to methods, apparatus, and systems for periodically delivering an optimal batch broadcast schedule based on distributed client feedback. Overall aspects of one embodiment of the method and system operations are generally shown in the process flow diagram of Figure 3. The overall scheme enables a broadcast operator, such as a

cable system operator or satellite system operator, for example, to optimize its broadcast bandwidth in a manner that best fulfills content demanded by various recipients of the broadcast.

As an overview, it is desired by the broadcast operator to broadcast programs, such as movies and television shows, for example, that best match the demands of broadcast subscribers. To meet this purpose, the broadcast operator sends out (broadcasts) data that describes characteristics of programming (referred to as pieces of content) that the broadcast operator is considering for inclusion in future, upcoming broadcasts. At this point in time, the pieces of content in the upcoming broadcast have yet to be scheduled, since the pieces of content to be included in these future broadcasts have yet to be identified. The data, referred to as "meta-data", includes descriptors and attributes of the pieces of content that are up for consideration for upcoming broadcasts. For example, the meta-data may include program names, major actors and actresses, genre, etc. In essence, the meta-data are used to characterize various aspects of each program. The meta-data are received at client systems that are configured to receive the meta-data broadcast. In one embodiment, a meta-data broadcast schedule is first broadcast to tell the client systems to "listen for" the meta-data (e.g., tune to a particular channel to receive the meta-data during a scheduled time).

In response to receiving the metadata, the client systems process the meta-data to generate client demand feedback data. The feedback data may be generated by user rating and rankings, as well as by automatically generated ratings in rankings based on previously viewed pieces of content using a combination of the newly received meta-data and existing meta-data already stored on the client corresponding to the previously viewed content. Upon being generated, the client demand feedback data is returned to the broadcast operations center by various means, such as a back-channel or the like.

In connection with the foregoing activities being performed at multiple client systems, client demand feedback data is received from multiple client systems. This feedback data is aggregated to identify which pieces of content that are being considered for upcoming broadcasts have the greatest demand. A broadcast schedule queue containing an ordered list of the pieces of content, based on demand, is maintained, with the pieces of content with the highest demand placed at the top of the queue. A batch of content (e.g., one or more pieces of content) is periodically selected from a top portion of the broadcast schedule queue to be broadcast during a next broadcast schedule window based on the size of the pieces of content and the available bandwidth for the next broadcast schedule window. Once a piece of content is broadcast, its previous demand rating data are cleared, and it is moved to the bottom of the queue.

During a given broadcast schedule window, one or more pieces of content are broadcast to the client systems. The client systems provide a mechanism (a content rating table) for determining whether or not to capture and store each piece of content that is broadcast. In response to a user access of a piece of content, a meta-data table and the content rating table are updated.

VI. ISSUES

The issues presented in this appeal are:

(1) Whether each of independent claims 1, 26, 35, and 44 is unpatentable in view of the combination of the *Wu*, *Rao*, *Girard*, and *Levitan* references.

VII. GROUPING OF CLAIMS

Claims 1-25 and 44-56 stand or fall together, and claims 26-34 and 35-43 stand or fall together.

VIII. ARGUMENTS

This section sets forth Applicant's arguments against the rejections and in favor of the patentability of the claims on appeal. Part VIII.A provides a brief overview of the *Wu*, *Rao*, *Girard*, and *Levitan* references, which the Examiner used in the final Office Action to reject the claims on appeal. Next, part VIII.B discusses why the combination of the *Wu*, *Rao*, *Girard*, and *Levitan* references do not render the independent claims 1, 26, 35, and 44 unpatentable.

A. Overview of *Wu*, *Rao*, *Girard*, and *Levitan* References.

1. *Wu*.

Wu discloses a method for providing a personalized video channel. As illustrated in Figure 1, programming segments available from broadcast streams 112 on a digital television system are combined together with programming provided over additional on demand streams 116. As stated in the abstract,

> The system allows the limited bandwidth of digital television systems such as digital cable or digital satellite to be used to support more flexible programming based on user requests. A portion of the bandwidth of the digital television system is set aside as on demand streams for user requested programming. The user selects programs of interest and the shows are recorded either when broadcast or when the requested program is transmitted over an on demand stream.

Wu also discloses a method for scheduling the use of the on demand streams according to requests. This allows the usage of the on demand streams to provide the most requested programming not available on the broadcast streams. More specifically, the on demand streams are determined in response to user inputs entered via an input 126 to a set top box 102 that drives a display 100. A process flow for defining a personalized stream is shown in Figure 2. A corresponding description begins at the heading "C. Personalized Stream" at the top of page 10.

The process begins at a step 400, with a list and/or grid of available segments being presented to a user via display 100. Programs that are not part of the broadcast streams 114 can be selected from a list of available audio/video sources (e.g., the contents of the audio/video source 124). Free form requests can also be accommodated by providing a field for typing titles of segments. This information may be entered via a keyboard displayed on display 100 or via input 126. In response to a free form request, the computer 122 could provide matching programs and/or recommendations over the data channel 118.

At step 402, the user selects the desired segments from the grid/list via input 126. In response, for each segment requested by the user, a determination is made at step 404 as to whether the segment is a broadcast segment or an on demand segment. Broadcast segments are segments that have a predetermined time and associated stream. In contrast, there are no pre-assigned streams associated with on demand segments.

If the segment is a broadcast segment, the set top box 102 is set to record the segment when it is scheduled to be broadcast, as depicted at step 406. If the segment is an on demand segment, a request is sent over the data channel 118 to receive the on demand segment, at step 408. Later, when the program is scheduled by the computer 122, the set top box 102 will be set to record the segment when it is available. In some embodiments, the on demand segments are scheduled on a first come-first served basis and the computer 122 will return a time and a stream identifier for the segment shortly after the request. In other embodiments, the requests are aggregated over a predetermined period, and then the programming choices are made.

Figure 3 shows a method employed by *Wu* for scheduling the on demand streams. This is also generally discussed in the second beginning with the heading "D. Scheduling the On Demand Streams" on page 12. First, at step 500, requests are received for the segments over

data channel 118 on the computer 122. Requests are received for varying predetermined periods, depending on the number of demand streams 116, or other factors. At step 502, the requests are ranked based on demand. The example rankings shown in Table 1 are based solely on the number requests for specific segments.

Next, at step 504, the rankings are used to schedule the transmissions of segments over the on demand streams 116. The *S* highest ranking segments are shown first on *S* on demand streams 116. When those segments are finished, the next highest ranking segments are shown, and so on. Other ranking systems are also briefly discussed, including bandwidth requirements.

Wu does not disclose, teach, or suggest the use of broadcasting meta-data including descriptions of pieces of content that are up for consideration to be potentially included in future, yet to be scheduled, broadcasts. More specifically, *Wu* does not broadcast meta-data for any purpose. It is not clear how *Wu* provides information to build the segment selection list/grid information. Presumably, this information is sent over data channel 118, which is depicted as a bi-directional channel in Figure 1 to support communication between computer 122 and set top box 102. Under conventional practices, this information would be downloaded to set top box 102 using a telephone line connection. Such a configuration (use of a telephone return) is described at page 4, lines 10-13.

2. *Rao.*

Rao discloses a video pedestal network. As stated in the abstract, *Rao* discloses,

> An architecture for distributing digital information to subscriber units wherein selection from among multiple digital services is accomplished by transmitting a tuning command from a subscriber unit to an intermediate interface. The intermediate interface selects the desired service from a broadband network and transmits it to the subscriber unit over a bandwidth-constrained access line. The bandwidth-constrained access line may be implemented with existing infrastructure, yet the subscriber unit may access a wide variety of digital

information available on the broadband network. Universal broadband access is thus provided at low cost. Output bandwidth of broadcast equipment may also be optimized.

As shown generally in Figures 11, 12a-b, 13a-b, and 14, *Rao* discloses a scheme for transmitting various pieces of content (e.g., MOVIE1, MOVIE2 ... in Figure 14) using a multiplexed stream. *Rao* concerns the use of transmitting data over computer networks using network transport mechanisms that do not employ conventional cable, satellite, or terrestrial broadcasting. Programming options may be depicted on a electronic program guide.

3. ***Girard.***

Gerard discloses a system and method for calling video on demand using an electronic programming guide. As recited in the SUMMARY OF THE INVENTION section,

> According to one aspect of this invention, an interactive television system comprises a centrally located head end server coupled to service multiple, remotely located set-top boxes. *Each set-top box runs an electronic programming guide (EPG) that provides an on-screen program grid that lists program titles in relation to their* ***scheduled*** *viewing times and channel numbers. The viewer can scroll through the program grid, backward and forward, or up and down, to review past, current, and future programs.* A database, resident at the head end server, supplies the *program titles and* ***scheduled*** *viewing times of the past, current, and future programs* to the electronic programming guide as the viewer scrolls through the menu.
>
> The head end server transmits to the EPG all real-time video data streams of the available programs. A continuous media server, resident at the head end server, stores the video data streams to maintain a reserve of previously played past programs. The media server can also store video preview clips of future programs. The video data streams are stored digitally in a disk array in mapped locations. The locations of the video data streams are kept in a database and each video data stream can be accessed through pointers to the disk.
>
> When a viewer selects a current program, the head end server supplies the real-time video data stream of the current program to the set-top box. When the viewer selects a past program, the database provides a pointer to a location in the disk array that is associated with the selected past program. The continuous media server uses the pointer to retrieve a video data stream of the selected past program and supplies the video data stream to the set-top box. When the viewer selects a future program, the database provides the appropriate memory pointer and the

continuous media server retrieves a video preview clip of the future program and supplies it to the set-top box. (Emphasis added)

Details of a display generated by the electronic programming guide (EPG) are shown in Figure 2. As is illustrated, the EPG enables a user to navigate through a grid of scheduled programming via input buttons using a remote control or the like. This is similar to the behavior of today's typical EPG today, such as the EPGs provided to a cable or satellite television subscriber, or a third party service (e.g., TiVo). As further stated in Col. 3, lines 23-31,

> Each STB 26a-26d is configured to run an electronic programming guide (EPG) 38a-38d. *An electronic programming guide provides an on-screen listing of various program titles correlated to corresponding* ***scheduled*** *viewing times.* The listing is organized in a predetermined arrangement that is displayed on the television. The EPG might also include other program descriptive information, including whether the program is provided in closed caption or stereo. (Emphasis added)

"Figure 5 shows the general operational method of the interactive television system" (Col. 6, lines 8-9). The process begins with a step 100, during which, a real-time video data stream is transmitted from head end server 22 to set-top boxes (STB) 24a-24d. "The real-time video data streams provide all of the current programs available on the cable system, as is conventionally done (Col. 6, lines 15-17, emphasis added). Concurrently, in step 102, the video data streams of the current programs are stored in program storage 72 of continuous media server 68 to provide a reserve of past programs. Any video preview clips of future programs are also stored in the continuous media server, as depicted in a step 104.

Continuing at Col. 6, line 23,

> The program information (e.g., program title, scheduled viewing time, closed caption, etc.) is stored the SQL database 90 (step 106). The EPG is run on the individual STBs 26a-26d so that each viewer is presented with their own controllable, manipulable on-screen program grid (step 108). ***As the viewer scrolls the EPG screen backward or forward, up or down, the STB sends an SQL inquiry back to head end server 22. The SQL database 90 then supplies the***

program information used to fill in the panels and grid (step 110). (Emphasis added)

Girard does not disclose, teach, or suggest the use of broadcasting meta-data including descriptions of pieces of content that are up for consideration to be potentially included in future, yet to be scheduled, broadcasts. More specifically, it is clear from above that *Girard* does not broadcast any meta-data describing pieces of content for any purpose. Rather, in response to a user navigating the EPG screen, a query is sent from the set top box to the head end server 22, which provides an SQL database 90 in which the programming information is stored. In response to the query, the program information is returned to the set top box to fill in the panels and grids. This interaction is performed between a set top box and the head end server on an ongoing basis using real-time streams. The information is sent "via conventional home entry lines 36, such as twisted-pair lines or coaxial cable (Col. 3, lines 19-22).

4. *Levitan.*

Levitan discloses a personal channel in a television system. As stated in the abstract, *Levitan* discloses,

> An apparatus for providing a customer of a television system with virtual personal channel which being selected delivers a television program of the most personal interest no matter on which channel and at what time the program is physically transmitted. *Descriptive and time/channel data of* ***scheduled TV programs*** *are broadcasted through a communication medium from the system headend to customer terminal prior to transmission of programs themselves.* In customer terminal all scheduled TV programs are evaluated by a computer that stores customer profile data and controls customer video receiver and video recorder. Whenever customer selects personal channel the computer switches the video receiver to a physical channel on which a program having the best evaluation is transmitted. The best program of the day or the week is recorded and can also be presented as current program of personal channel. (Emphasis added)

Girard does not disclose, teach, or suggest the use of broadcasting meta-data including descriptions of pieces of content that are up for consideration to be potentially included in future, yet to be scheduled, broadcasts. More specifically, *Levitan* merely sends data concerning already

scheduled programming through a cable TV network prior to the program. As stated at Col. 2, lines 57-64,

> When a TV program *is* <u>*scheduled*</u> for transmission its descriptive information is retrieved from the database, suplemented with data on transmission time and channel and transmitted through the network prior to the program. In customer terminals the preview data of each program is evaluated in respect to customer profile and as a result, each terminal makes its own choice before the scheduled TV programs are transmitted. (Emphasis added)

Levitan provides little detail concerning what "description" information is provided to the compute 28. Col. 2, lines 48-56 state,

> The information includes both formatted data intended for computer analysis and unformatted presentations intended for customer attention. The presentations comprise text, voice, still picture and short fragments of TV programs. The formatted data is organized in a special way so that it could be processed by a computer program in a computerized video terminals (CVT) 14 connected to the network at the customer end

There is also a discussion of a customer browsing his personal guide to get information on selected programs (Col. 4, lines 7-10), but there is absolutely no teaching on how the personal guide is generated, how the data used to populate the displays on the personal guide are provided, or anything else concerning the personal guide.

B. Independent Claims 1, 26, 35, and 44 are not obvious in view of *Wu*, *Rao*, *Girard*, and *Levitan*.

To establish a *prima facie* case of obviousness, there must first be some suggestion or motivation to modify a reference or to combine references, and second be a reasonable expectation of success. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure. Third, the prior art reference (or references when combined) must teach or suggest all the claim limitations. M.P.E.P. § 706.02(j) from *In Re Vaeck*, 947 F.2d 488, 20

USPQ2d 1438 (Fed. Cir. 1991). Where claimed subject matter has been rejected as obvious in view of a combination of prior art references, a proper analysis under § 103 requires, *inter alia*, consideration of two factors: (1) whether the prior art would have suggested to those of ordinary skill in the art that they should make the claimed device; and (2) whether the prior art would also have revealed that in so making, those of ordinary skill would have a reasonable expectation of success. Both the suggestion and the reasonable expectation of success must be founded in the prior art, not in the Applicants' disclosure. *Amgen v. Chugai Pharmaceutical*, 927 F.2d 1200, 18 USPQ2d 1016 (Fed. Cir. 1991), *Fritsch v. Lin*, 21 USPQ2d 1731 (Bd. Pat. App. & Int'f 1991). An invention is non-obvious if the references fail not only to expressly disclose the claimed invention as a whole, but also to suggest to one of ordinary skill in the art modifications needed to meet all the claim limitations. *Litton Industrial Products, Inc. v. Solid State Systems Corp.*, 755 F.2d 158, 164, 225 USPQ 34, 38 (Fed. Cir. 1985).

The examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references. M.P.E.P. § 70602(j) from *Ex parte Clapp*, 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985). Obviousness cannot be established by combining references without also providing evidence of the motivating force which would impel one skilled in the art to do what the patent applicant has done. M.P.E.P. § 2144 from *Ex parte Levengood*, 28 USPQ2d 1300, 1302 (Bd. Pat. App. & Inter. 1993) (emphasis added by M.P.E.P.).

As explained below, each of independent claims 1, 26, 35 and 44 is patentable over the combination of *Wu*, *Rao*, *Girard*, and *Levitan* because all of the three prongs of the foregoing prima facie obviousness test are not met.

1. Summary of the Examiner's rejection.

In the final Office Action, the Examiner alleged that independent claims 1, 26, 35, and 44 are unpatentable over the combination of *Wu*, *Rao*, *Girard*, and *Levitan*, and gave the following reasoning in support of his rejection:

> Regarding claim 1, Wu discloses a list and/or grid (meta data) of future programs could be shown to the user (page 9, lines 2-5). Wu discloses a list and/or grid (meta data) of available segments is presented (page 10, lines 7-11); Wu discloses the broadcast segments have time and identifiers associated with it that causes the set top box to record the program segment when it is scheduled (page 10, line 29-page 11, line6), which meets the limitation on meta-data to clients that includes the description of pieces of content that may or may not be included in an actual broadcast schedule.
>
> Wu discloses the user makes selection for the desired stream (page 10, lines 18-28), which meets the limitation on receiving individual sets of client demand feedback from clients comprising data indicating a client interest level in pieces of content.
>
> Wu discloses the users make demands for programs (page 12, lines 7-18). Wu discloses the request are ranked based on demand and the rankings show the most popular show first (page 12, lines 19-32), which meets the limitation on maintaining a broadcast schedule queue comprising an ordered list of pieces of content that indicates interest derived from client feedback.
>
> Wu discloses the shortest segment finishes before the longer segments (page 13, lines 5-8). Wu discloses the lack of bandwidth would send a message to the set top box the request could not be accommodated (page 13, lines 11-13). Wu discloses that the segments are scheduled for bandwidth requirements and accommodate shorter requests before longer requests (page 13, lines 29-31), which meets the limitation on selecting a batch of content comprising one or more pieces of content from the top portion of the broadcast schedule queue to be broadcast during the next available bandwidth.
>
> Wu fails to disclose the meta-data is broadcasted. Rao discloses the digital broadcast has program data and electronic program data (column 9, lines 47-65, abstract); Rao discloses the program guide is used by the user to select programs (column 16, lines 3-16), which meets the limitation on broadcasting meta-data. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Wu to have the meta-data broadcast as taught by Rao in order to save client system resources so the system will not have to scan the incoming programs and generate a program guide.

Neither Wu nor Rao disclose in consideration for upcoming broadcasts. Girard discloses the viewer can review past programs (column 2, lines 5-27). Girard discloses the viewer can select a past program (column 2, lines 28-40). Girard discloses the viewer can use the electronic programming guide to select video on demand of past programs (column 1, lines 6-12). Girard discloses the electronic programming guide (meta data) can be used to order video on demand (column 2, lines 41-44), which meets the limitation on the meta data including descriptions of a plurality of pieces of content that are in consideration for upcoming broadcasts by a broadcast operations center. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Wu in view of Rao to have the electronic program guides have past programs on demand as taught by Girard in order to provide users a list of programming to select from in case if the user missed a previous program.

Neither Wu, Rao, nor Girard discloses may or may not be included in broadcasting. Levitan discloses the personal program system selects the best available program (column 1, line 64-column 2, line 20). Levitan discloses the programs that are broadcast in the future are chosen by the system and/or rearranged by the user according to user preference (column 3, lines 35-65; figure 4), which meets the limitation on may or may not be included in a broadcasting schedule. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify Wu in view of Rao in further view of Girard to have the ability to have programs included in broadcasting as taught by Levitan in order to provide programs to a population of viewers instead of just one, thereby utilizing maximizing bandwidth.

2. Claim 1 is patentable over the combination of *Wu*, *Rao*, *Girard* and *Levitan* because they do not disclose, teach, or fairly suggest every element and limitation of the claim.

Claim 1 recites a method including the elements and limitations of:

"broadcasting meta-data to a plurality of client systems, the meta-data including descriptions of a plurality of pieces of content that are *in consideration for upcoming broadcasts by a broadcast operations center but may or may not be included in an actual broadcast schedule to be generated*" (Emphasis added)

The applicant respectfully asserts that none of the cited references, alone or in combination, disclose, teach, or fairly suggest the foregoing elements and limitations, as required by the third prong of the *In Re Vaeck prima facie* obviousness test.

(a) *Wu* does not disclose, teach, or suggest providing meta-data to clients that include descriptions of pieces of content that may or may not be included in an actual broadcast schedule.

With respect to *Wu* as presented above, the Examiner's acknowledges that "Wu fails to disclose the meta-data is broadcasted."

(b) The combination of *Wu* and *Rao* do not disclose, teach, or suggest providing meta-data to clients that include descriptions of pieces of content that may or may not be included in an actual broadcast schedule.

In view of the foregoing deficiency, the Examiner's states that "Rao discloses the digital broadcast has program data and electronic program guide data (column 9, lines 47-65, abstract)." The cited texts states,

> In reality, packets of disparate origin must be carried over the access line at the same time. For example, in one embodiment that is compliant with the European Digital Video Broadcasting (DVB) standard, both program data and Service Information (SI) (which carries the electronic program guide) data will typically be simultaneously delivered to the subscriber unit as known to those of skill in the art. Furthermore, with future advances in ADSL technology, it will become feasible to increase the capacity of the twisted pair medium to the point that it will become possible to support multiple video programs over a single telephone line. For example, with 25 Mb/s capacity it should be possible to carry 5 or 6 services. This can be used to serve multiple subscriber units within one home simultaneously over a single twisted pair access line. Alternatively, if the access line is implemented using a coaxial cable whose bandwidth is higher than that of twisted pair, it may be required to carry more than one service over this line in order to support multiple subscriber units in the home.

The foregoing merely states that both program data and Service Information (SI) (which carries the electronic program guide) will typically be simultaneously delivered to the subscriber unit using the European Digital Video Broadcasting (DVB) standard, as known to those of skill in the art. In this instance, the DVB standard, which employs MPEG-2 packet for sending data over computer networks, enables two sets of data (the program data and SI) to be simultaneously delivered to the same subscriber. The foregoing says nothing about the electronic programming

guide being broadcast to multiple clients. Furthermore, the program information provided in the electronic programming guide only pertain to scheduled programming.

In addition to the foregoing, the Examiner acknowledges "neither Wu nor Rao disclose in consideration for upcoming broadcasts."

(c) The combination of *Wu*, *Rao*, and *Girard* do not disclose, teach, or suggest providing meta-data to clients that include descriptions of pieces of content that may or may not be included in an actual broadcast schedule.

In view of the foregoing deficiency with respect to *Wu* and *Rao*, the Examiner asserts that such an element is disclosed by *Girard*. Applicant respectfully disagrees.

In support of his position, the Examiner states,

> Girard discloses the viewer can review past programs (column 2, lines 5-27). Girard discloses the viewer can select a past program (column 2, lines 28-40). Girard discloses the viewer can use the electronic programming guide to select video on demand of past programs (column 1, lines 6-12). Girard discloses the electronic programming guide (meta data) can be used to order video on demand (column 2, lines 41-44), which meets the limitation on the meta data including descriptions of a plurality of pieces of content that are in consideration for upcoming broadcasts by a broadcast operations center.

While the Applicant agrees with the first three statements regarding *Girard*, and acknowledges that video on demand can be ordered via the electronic programming guide, the Applicant strongly disagrees with the last statement. *Girard*'s use of meta-data do not pertain to any programs that are in consideration for upcoming **broadcasts**.

Clearly, *Girard* video on demand is not a broadcast. Rather, it is a unicast that delivers a video data stream to a single user.

As discussed in a prior Office Action (February 3, 2004) response,

As defined by the Merriam-Webster online Collegiate Dictionary (www.m-w.com), a broadcast is defined as,

> Main Entry: **[2]broadcast**
> Function: *verb*
> Inflected Form(s): **broadcast** *also* **broad·cast·ed**; **broad·cast·ing**
> *transitive senses*
> **1** : to scatter or sow (as seed) broadcast
> **2** : to make widely known
> **3** : to transmit or make public by means of radio or television
> *intransitive senses*
> **1** : to transmit a broadcast
> **2** : to speak or perform on a broadcast program
> - **broad·cast·er** *noun*

The most common use of a broadcast is a radio or television broadcast. When using analog transmissions, only a single piece of content can be broadcast on a given channel (frequency) at a given point in time. Digital transmissions may be configured to enable multiple "channels" to share a common underlying analog frequency or frequency band. Since it is desired to maximize channel usage (both in the analog and digital transmission realm), the meta-data (under the present invention) are broadcast to a plurality of clients, rather than sending the meta-data to individual clients using unicasting or the like. Subsequently, programming is selected in view of client demand feedback data, which is generated, in part, using the meta-data, and is returned by the clients, such that programs in high demand are broadcast, while programs with lesser demand are not. The broadcast schedule pertains to pieces of content that are schedule to be broadcast. It does not pertain to delivery of content to individual subscribers via on-demand streams as employed by *Girard*.

In particular, *Girard* states:

FIG. 7 shows a preferred process when a viewer selects a past program. The viewer scrolls backward in the program grid (to the left in FIG. 2) to list previously played shows, and up and down to list different channels (step 130). For instance, suppose a viewer wanted to watch the "Frasier" episode on Tuesday, October 11, two nights before the currently running programming of October 13. The viewer would scroll back to Tuesday, October 11, 9:00 pm PST, and then up or down to the NBC channel to find a listing of "Frasier". During the scrolling, the relevant information to fill in the channel panel, time panel, program summary panel, and program grid are supplied from SQL database in response to SQL queries sent by the set-top box (step 132). The viewer can then select the highlighted program title in the EPG (step 134). The EPG sends an SQL inquiry to the SQL database 90 requesting the selected "Frasier" show (step 136). The SQL database returns a pointer to the location at which the video data stream of "Frasier" is stored in program storage 72 (step 138).

The EPG then passes the pointer to the continuous media server 68 and requests it to access the "Frasier" video data stream (step 140). ***The continuous media server retrieves the video data stream from the disk array storage subsystem, and transmits it to the requesting EPG*** (step 142). The video data stream of the previously played "Frasier" episode is then displayed on the television (step 144). (Col. 6, line 46 – Col. 7 line 4, emphasis added)

It is clear from above that *Girard* does not teach, disclose or fairly suggest the limitation of "the meta data including descriptions of a plurality of pieces of content that are in consideration for upcoming broadcasts by a broadcast operations center."

(d) The combination of *Wu*, *Rao*, *Girard*, and *Levitan* do not disclose, teach, or suggest providing meta-data to clients that include descriptions of pieces of content that may or may not be included in an actual broadcast schedule.

The examiner states, "neither Wu, Rao, nor *Girard* discloses may or may not be included in broadcasting." In view of this deficiency, the Examiner states,

Levitan discloses the personal program system selects the best available program (column 1, line 64-column 2, line 20). Levitan discloses the programs that are broadcast in the future are chosen by the system and/or rearranged by the user according to user preference (column 3, lines 35-65; figure 4), which meets the limitation on may or may not be included in a broadcasting schedule.

First, let us consider the claim language of the first subparagraph of claim 1 recited above as a whole. The meta-data are used to describe pieces of content that are in consideration to be included in upcoming broadcast, but may or may not be included in an actual broadcast schedule *to be* generated. Thus, the broadcast schedule is yet to be generated since it is unknown at this time what pieces of content will and will not be included in an actual broadcast schedule (and subsequent actual broadcast).

The term actual broadcast schedule pertains to a schedule of pieces of content that are schedule to be broadcast by a broadcaster (e.g., a broadcast operations center). It does not pertain to a recording or reception schedule at a receiving end (e.g., at a set top box). A broadcast schedule is determined by the broadcast operations center, and is entirely independent of any operations (absent the client demand feedback) occurring at the client end.

Levitan discloses "an apparatus for providing a customer of a television system with a virtual personal channel which being selected delivers a television program on the most personal interest no matter on which channel and at what time the program is physically transmitted" (Abstract). The actions of the *Levitan* apparatus have absolutely no effect on any broadcast schedule. In fact, the broadcast operations center would be completely unaware of the existence of a *Levitan* apparatus.

Under embodiments of the present invention, meta-data describing programs that are up for consideration for, but may not actually included in, a future broadcast (schedule), are broadcast to a plurality of clients. In other words, the meta-data pertain to programs for which the users may provide client demand feedback data for – this is, a list of program options. In response to client demand feedback data that is used to identify which programs are in the highest demand, a broadcast schedule is generated. The broadcast schedule defines programs

that will actually be broadcast, and the times at which those programs will be broadcast. In some cases, a portion of the programs that were up for consideration to be broadcast will not be scheduled to be broadcast (and thus, will not be broadcast).

(e) The combination of *Wu*, *Rao*, *Girard*, and *Levitan* do not disclose the claimed invention as a whole.

In determining the differences between the prior art and the claims, the question under 35 U.S.C. 103 is not whether the differences themselves would have been obvious, but whether the claimed invention as a whole would have been obvious. *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983); *Schenck v. Nortron Corp.*, 713 F.2d 782, 218 USPQ 698 (Fed. Cir. 1983). MPEP § 2141.02.

Under embodiments of the present invention, including the inventions claimed in the independent claims 1, 26, 35 and 44, meta-data describing programs that are up for consideration for, but may not actually included in, a future broadcast schedule (and corresponding actual broadcast), are broadcast to a plurality of clients. In other words, the meta-data pertain to programs for which the users may provide client demand feedback data for – this is, a list of program options. In response to client demand feedback data that is used to identify which programs are in the highest demand, a broadcast schedule is generated. The broadcast schedule defines programs that will actually be broadcast, and the times at which those programs will be broadcast. In some cases, a portion of the programs that were up for consideration to be broadcast will not be scheduled to be broadcast (and thus, will not be broadcast). Additionally, the broadcast schedule is employed to selectively broadcast pieces of content in view of available broadcast bandwidth.

The invention as a whole would not be reasonably contemplated by one of ordinary skill in the art in view of the *Wu*, *Rao*, *Girard*, and *Levitan* references. None of these references disclose, teach, or fairly suggest the overall concept of sending out data related to pieces of content that a broadcast operations center is considering for upcoming broadcast, including pieces of content that may not be included in an actual upcoming broadcast. All of the electronic programming guides pertain to programming that *is already scheduled* for broadcast, as is the case with any conventional EPG. There is no teaching or suggestion in any of the cited references to employ meta-data (describing respective pieces of content) for gathering client demand feedback data about the pieces of content, which in turn is used to determine which pieces of content have the highest demand.

(f) Conclusion: The combination of *Wu*, *Rao*, *Girard*, and *Levitan* do not support at least one prong of the prima facie obviousness test, and therefore each of Independent claims 1, 26, 35, and 44 are patentable.

It is clear from above that the combination of *Wu*, *Rao*, *Girard*, and *Levitan* do not support at least one prong of the *In Re Vaeck prima facie* obviousness test to render independent claim 1 unpatentable. Applicant therefore respectfully requests withdrawal of the rejection and allowance of claim 1.

Independent claim 26 is an apparatus claim to an apparatus for performing operations analogous to the operations recited in method claim 1. Claim 26 includes the elements of:

"receive individual sets of client demand feedback data from a plurality of client systems, each individual set of client demand feedback data generated in response to meta-data that is broadcast to the plurality of client systems, the meta-data including descriptions of a plurality of pieces of content that are in consideration for upcoming broadcasts but may or may not be

included in an actual broadcast, each individual set of client demand feedback data indicating a client interest level in at least a portion of the plurality of pieces of content."

In view of the foregoing arguments in support of the allowance of claim 1, Applicant respectfully asserts that independent claim 26 is patentable over the cited art for similar reasons. Applicant therefore respectfully requests withdrawal of the rejection and allowance of claim 26.

Independent claim 35 is a Beauregard claim (machine-readable medium storing instructions for performing operations) claiming software that may be executed on an apparatus to perform analogous operations recited in the apparatus claim of independent claim 26. Accordingly, Applicant respectfully asserts that independent claim 35 is patentable over the cited art for similar reasons to those presented above in support of allowance of claims 1 and 26. Applicant therefore respectfully requests withdrawal of the rejection and allowance of claim 35.

Independent claim 44 is a system claim reciting broadcast- and client-side components for performing the method of claim 1. Accordingly, Applicant respectfully asserts that independent claim 35 is patentable over the cited art for similar reasons to those presented above in support of allowance of claim 1. Applicant therefore respectfully requests withdrawal of the rejection and allowance of claim 44.

5. Claims 2-25, 27-34, 36-43, and 45-56 are patentable over the cited references.

Claims 2-25, 27-34, 36-43, and 45-56 all depend on allowable independent claims, as discussed above. These dependent claims are therefore allowable for at least the same reasons as the dependent claims, as well as by virtue of the features recited in the claims. Applicant therefore respectfully requests withdrawal of the rejections and allowance of these claims.

IX. CONCLUSION

Given the above arguments, Applicant believes all claims on appeal are in condition for allowance. If the undersigned attorney has overlooked a teaching in any of the cited references that is relevant to allowance of the claims, the Examiner is requested to specifically point out where such teaching may be found. Further, if there are any informalities or questions that can be addressed via telephone, the Examiner is encouraged to contact the undersigned attorney at (206) 292-8600.

Charge Deposit Account

Please charge our Deposit Account No. 02-2666 for any additional fee(s) that may be due in this matter, and please credit the same deposit account for any overpayment.

Respectfully submitted,

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Appendix
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APPENDIX
CLAIMS ON APPEAL

1. (Previously Presented) A method for generating a broadcast schedule, comprising:

broadcasting meta-data to a plurality of client systems, the meta-data including descriptions of a plurality of pieces of content that are in consideration for upcoming broadcasts by a broadcast operations center but may or may not be included in an actual broadcast schedule to be generated;

receiving individual sets of client demand feedback data from at least a portion of said plurality of client systems, each individual set of client demand feedback data comprising data indicating a client interest level in at least a portion of the plurality of pieces of content;

maintaining a broadcast schedule queue comprising an ordered list of pieces of content that indicates relative levels of client interest in each piece of content that are derived from an aggregation of the client demand feedback data; and

selecting a batch of content comprising one or more pieces of content from a top portion of the broadcast schedule queue to be broadcast during a next broadcast schedule window based on a size of said one or more pieces of content in combination with an available bandwidth for the next broadcast schedule window.

2. (Original) The method of claim 1, wherein the method is performed continuously such that a new batch of content is broadcast during sequential broadcast schedule windows.

3. (Original) The method of claim 1, further comprising resetting the client demand feedback data for each piece of content in the batch of content that is selected to be broadcast during a next broadcast schedule window in response to a broadcast of that batch of content such that the piece of content cannot be selected again for a subsequent broadcast until new client demand feedback data corresponding to that piece of content is received.

4. (Original) The method of claim 1, wherein the individual sets of client demand feedback data are received from respective client systems on an asynchronous basis and the broadcast schedule queue is recalculated upon receiving each individual set of client demand feedback data.

5. (Original) The method of claim 1, further comprising adjusting the broadcast schedule queue in consideration of business objectives.

6. (Original) The method of claim 1, wherein the client demand feedback data comprises ratings data corresponding to respective pieces of content, and wherein the pieces of content in the broadcast schedule queue are ordered based on corresponding relative rating values derived from an aggregation of the ratings data.

7. (Original) The method of claim 6, wherein the aggregation of the ratings data comprises calculating an average ratings value for each piece of content and the highest rated piece of content is the piece of content with the highest average rating value.

8. (Original) The method of claim 6, wherein at least a portion of the ratings data comprise rating inputs provided by users of the client systems, each rating input indicating a level of desirability of a given user to receive a corresponding piece of content.

9. (Original) The method of claim 6, wherein at least a portion of the ratings data is automatically generated by the client systems based on data stored on the client systems that are indicative of content preferences of users of those client systems.

10. (Original) The method of claim 6, further comprises adjusting ratings data corresponding to any pieces of content that are rated by a given client system in consideration of a revenue-generating potential for those pieces of content.

11. (Original) The method of claim 6, wherein, for each individual set of client demand feedback data received from a client system, a first portion of the ratings data comprises rating inputs provided by one or more users of that client system and a second portion of the ratings data are automatically generated by that client system based on data stored on that client system that are indicative of content preferences of said one or more users of that client system.

12. (Original) The method of claim 6, wherein the meta-data is broadcast as a continuous stream and includes a content descriptor for each piece of content comprising a set of attributes and attribute values that are used to describe that piece of content, and further wherein at least a portion of the client systems provide ratings data corresponding to an individual piece of content in response to receiving the content descriptor for that piece of content.

13. (Original) The method of claim 1, wherein at least a portion of the individual sets of client demand feedback data comprise relative rankings data pertaining to relative levels of interest in at least two pieces of content, and the broadcast schedule queue is determined, at least in part, by aggregating the relative rankings data.

14. (Original) The method of claim 13, wherein the aggregation of the relative rankings data comprises calculating an average ranking value for each piece of content among said plurality of pieces of content and wherein the ordered list reflects the relative average ranking values of corresponding pieces of content.

15. (Original) The method of claim 13, wherein at least a portion of the relative rankings data comprise individual sets of relative ranking inputs provided by users of the client systems, each individual set of relative ranking inputs comprising a relative ranking of at least two pieces of content, wherein the relative ranking is indicative of a relative level of desirability of a given user of a respective client system to receive a broadcast of the pieces of content ranked by that user.

16. (Original) The method of claim 13, wherein at least a portion of the relative rankings data is automatically generated by the client systems based on data stored on the client systems that are indicative of content preferences of users of the client systems.

17. (Original) The method of claim 13, further comprises adjusting relative rankings data corresponding to pieces of content that are rated by a given client system in consideration of a revenue-generating potential for those pieces of content.

18. (Original) The method of claim 13, wherein, for each individual set of client demand feedback data among at least a portion of the individual sets of client demand feedback data comprising relative rankings data, a first portion of the relative rankings data comprises relative ranking inputs provided by one or more users of the client system from which that individual set of client feedback is received and a second portion of the relative rankings data are automatically generated by that client system based on data stored on that client system that are indicative of content preferences of said one or more users of that client system.

19. (Original) The method of claim 13, wherein a current set of meta-data corresponding to a set of pieces of content considered for an upcoming broadcast is broadcast as a continuous stream that is repeated and includes a respective content descriptor for each piece of content included in the set of pieces of content, and wherein at least a portion of the individual sets of

client demand feedback data includes a ranked list expressing a relative interest in all of the pieces of content in the set of pieces of content.

20. (Original) The method of claim 1 further comprising broadcasting a broadcast schedule prior to broadcasting the batch of content that is selected to be broadcast during the next broadcast schedule window.

21. (Original) The method of claim 1, wherein the plurality of client systems are segmented such that each client system is a member of a particular segment among multiple segments and each individual set of client feedback data includes data that identifies the segment the client system is a member of, and further wherein one or more pieces of content are selected to be broadcast during the next broadcast schedule window for each segment.

22. (Original) The method of claim 21, wherein the plurality of client systems are segmented based on geography such that each client is assigned to a geographical region.

23. (Original) The method of claim 21, wherein the plurality of client systems are segmented based on a network by which each client receives broadcast content.

24. (Original) The method of claim 1, further comprising broadcasting the batch of content using a multi-stage broadcast network.

25. (Original) The method of claim 24, wherein the multi-stage broadcast network uses a store and forward mechanism in which broadcast data is stored and forwarded between different stages.

26. (Previously Presented) An apparatus, comprising:

a processor having circuitry to execute instructions;

a communications interface coupled to the processor to receive data from the one or more client systems;

a storage device coupled to the processor, having sequences of instructions stored therein, which when executed by the processor cause the apparatus to

receive individual sets of client demand feedback data from a plurality of client systems, each individual set of client demand feedback data generated in response to meta-data that is broadcast to the plurality of client systems, the meta-data including descriptions of a plurality of pieces of content that are in consideration for upcoming broadcasts but may or may not be included in an actual broadcast, each individual set of client demand feedback data indicating a client interest level in at least a portion of the plurality of pieces of content;

maintain a broadcast schedule queue comprising an ordered list of pieces of content that indicates relative levels of client interest in each piece of content that are derived from an aggregation of the client demand feedback data; and

select a batch of content comprising one or more pieces of content from a top portion of the broadcast schedule queue to be broadcast during a next broadcast schedule window based on a size of said one or more pieces of content in combination with an available bandwidth for the next broadcast schedule window.

27. (Original) The apparatus of claim 26, wherein the client demand feedback data for each piece of content in the batch of content that is selected to be broadcast during a next broadcast schedule window is reset in response to a broadcast of that batch of content such that the piece of content cannot be selected again for a subsequent broadcast until new client demand feedback data corresponding to that piece of content is received and the broadcast scheduling queue is updated continuously such that a new batch of content is broadcast during sequential broadcast schedule windows.

28. (Original) The apparatus of claim 27, wherein the individual sets of client demand feedback data are received from respective client systems on an asynchronous basis and the broadcast schedule queue is recalculated upon receiving each individual set of client demand feedback data.

29. (Original) The apparatus of claim 26, wherein the client demand feedback data comprises ratings data corresponding to respective pieces of content, and wherein the pieces of content in the broadcast schedule queue are ordered based on corresponding relative rating values derived from an aggregation of the ratings data.

30. (Original) The apparatus of claim 29, wherein, for at least a portion of the individual sets of client demand feedback data received from the client systems, a first portion of the ratings data comprises rating inputs provided by one or more users of the client system from which that individual set of client demand feedback data is received and a second portion of the ratings data are automatically generated by that client system based on data stored on that client system that are indicative of content preferences of said one or more users of that client system.

31. (Original) The apparatus of claim 29, wherein the meta-data is broadcast as a continuous stream and includes a content descriptor for each piece of content comprising a set of attributes and attribute values that are used to describe that piece of content, and further wherein at least a portion of the client systems provide ratings data corresponding to an individual piece of content in response to receiving the content descriptor for that piece of content.

32. (Original) The apparatus of claim 26, wherein at least a portion of the individual sets of client demand feedback data comprise relative rankings data pertaining to relative levels of

interest in at least two pieces of content, and wherein broadcast schedule queue is determined, at least in part, by aggregating the relative rankings data.

33. (Original) The apparatus of claim 32, wherein, for each individual set of client demand feedback data among at least a portion of the individual sets of client demand feedback data comprising relative rankings data, a first portion of the relative rankings data comprises relative ranking inputs provided by one or more users of the client system from which that individual set of client feedback is received and a second portion of the relative rankings data are automatically generated by that client system based on data stored on that client system that are indicative of content preferences of said one or more users of that client system.

34. (Original) The apparatus of claim 32, wherein a current set of meta-data corresponding to a set of pieces of content considered for an upcoming broadcast is broadcast as a continuous stream that is repeated and includes a respective content descriptor for each piece of content included in the set of pieces of content, and wherein at least a portion of the individual sets of client demand feedback data includes a ranked list expressing a relative interest in all of the pieces of content in the set of pieces of content.

35. (Previously Presented) A machine-readable medium having a plurality of machine-executable instructions stored thereon, which when executed by a machine cause the machine to:

receive individual sets of client demand feedback data from a plurality of client systems, the individual sets of client demand feedback data generated in response to meta-data that is broadcast to the plurality of client systems, the meta-data including descriptions of a plurality of pieces of content that are in consideration for a upcoming broadcast but may or may not be included in an actual broadcast, each individual set of client demand feedback data indicating a client interest level in at least a portion of the plurality of pieces of content;

maintain a broadcast schedule queue comprising an ordered list of pieces of content that indicates relative levels of client interest in each piece of content that are derived from an aggregation of the client demand feedback data; and

select a batch of content comprising one or more pieces of content from a top portion of the broadcast schedule queue to be broadcast during a next broadcast schedule window based on a size of said one or more pieces of content in combination with an available bandwidth for the next broadcast schedule window.

36. (Original) The machine-readable medium of claim 35, wherein execution of the plurality of machine instructions cause the machine to reset the client demand feedback data for each piece of content in the batch of content that is selected to be broadcast during a next broadcast schedule window in response to a broadcast of that batch of content such that the piece of content cannot be selected again for a subsequent broadcast until new client demand feedback data corresponding to that piece of content is received, and the broadcast scheduling queue is updated continuously such that a new batch of content is broadcast during sequential broadcast schedule windows.

37. (Original) The machine-readable media of claim 36, wherein the individual sets of client demand feedback data are received from respective client systems on an asynchronous basis and the broadcast schedule queue is recalculated upon receiving each individual set of client demand feedback data.

38. (Original) The machine-readable media of claim 35, wherein the client demand feedback data comprises ratings data corresponding to respective pieces of content, and wherein the pieces of content in the broadcast schedule queue are ordered based on corresponding relative rating values derived from an aggregation of the ratings data.

39. (Original) The machine-readable media of claim 38, wherein, for at least a portion of the individual sets of client demand feedback data received from the client systems, a first portion of the ratings data comprises rating inputs provided by one or more users of the client system from which that individual set of client demand feedback data is received and a second portion of the ratings data are automatically generated by that client system based on data stored on that client system that are indicative of content preferences of said one or more users of that client system.

40. (Original) The machine-readable medium of claim 38, wherein the meta-data is broadcast as a continuous stream and includes a content descriptor for each piece of content comprising a set of attributes and attribute values that are used to describe that piece of content, and further wherein at least a portion of the client systems provide ratings data corresponding to an individual piece of content in response to receiving the content descriptor for that piece of content.

41. (Original) The machine-readable medium of claim 35, wherein at least a portion of the individual sets of client demand feedback data comprise relative rankings data pertaining to relative levels of interest in at least two pieces of content, and wherein broadcast schedule queue is determined, at least in part, by aggregating the relative rankings data.

42. (Original) The machine-readable medium of claim 41, wherein, for each individual set of client demand feedback data among at least a portion of the individual sets of client demand feedback data comprising relative rankings data, a first portion of the relative rankings data comprises relative ranking inputs provided by one or more users of the client system from which that individual set of client feedback is received and a second portion of the relative rankings data are automatically generated by that client system based on data stored on that

client system that are indicative of content preferences of said one or more users of that client system.

43. (Original) The machine-readable medium of 41, wherein a current set of meta-data corresponding to a set of pieces of content considered for an upcoming broadcast is broadcast as a continuous stream that is repeated and includes a respective content descriptor for each piece of content included in the set of pieces of content, and wherein at least a portion of the individual sets of client demand feedback data includes a ranked list expressing a relative interest in all of the pieces of content in the set of pieces of content.

44. (Previously Presented) A system, comprising:

a broadcast server;

a database server, linked in communication with the broadcast server; and

a plurality of client systems linked in communication with the broadcast server via a first communications link and linked in communication with the database server via a second communication link;

wherein the broadcast server is programmed to broadcast meta-data to said plurality of client systems via the first communications link, the meta-data including descriptions of a plurality of pieces of content that are considered for an upcoming broadcast but may or may not be included in an actual broadcast schedule to be generated;

wherein each of said plurality of client systems is programmed to generate an individual set of client demand feedback data indicating a client interest level in at least a portion of the plurality of pieces of content based, in part, on the descriptions of such provided by the meta-data;

wherein at least a portion of the plurality of client systems send individual sets of client demand feedback data to the database server via the second communications link;

wherein the database server is programmed to maintain a broadcast schedule queue comprising an ordered list of pieces of content that indicates relative levels of client interest in

each piece of content that are derived from an aggregation of the client demand feedback data; and

wherein at least one of the broadcast server and database server is programmed to select a batch of content comprising one or more pieces of content from a top portion of the broadcast schedule queue to be broadcast during a next broadcast schedule window based on a size of said one or more pieces of content in combination with an available bandwidth for the next broadcast schedule window.

45. (Original) The system of claim 44, wherein the one of the database server is programmed to reset the client demand feedback data for each piece of content in the batch of content that is selected to be broadcast during a next broadcast schedule window in response to a broadcast of that batch of content such that the piece of content cannot be selected again for a subsequent broadcast until new client demand feedback data corresponding to that piece of content is received, and the broadcast scheduling queue is updated continuously such that a new batch of content is broadcast during sequential broadcast schedule windows.

46. (Original) The system of claim 45, wherein the individual sets of client demand feedback data are received from respective client systems on an asynchronous basis and the broadcast schedule queue is recalculated by the database server upon receiving each individual set of client demand feedback data.

47. (Original) The system of claim 44, wherein the client demand feedback data comprises ratings data corresponding to respective pieces of content, and wherein the pieces of content in the broadcast schedule queue are ordered based on corresponding relative rating values derived from an aggregation of the ratings data.

48. (Original) The system of claim 47, wherein, for at least a portion of the individual sets of client demand feedback data received from the client systems, a first portion of the ratings data comprises rating inputs provided by one or more users of the client system from which that individual set of client demand feedback data is received and a second portion of the ratings data are automatically generated by that client system based on data stored on that client system that are indicative of content preferences of said one or more users of that client system.

49. (Original) The system of claim 47, wherein the meta-data is broadcast as a continuous stream and includes a content descriptor for each piece of content comprising a set of attributes and attribute values that are used to describe that piece of content, and further wherein at least a portion of the client systems provide ratings data corresponding to an individual piece of content in response to receiving the content descriptor for that piece of content.

50. (Original) The system of claim 44, wherein at least a portion of the individual sets of client demand feedback data comprise relative rankings data pertaining to relative levels of interest in at least two pieces of content, and wherein broadcast schedule queue is determined, at least in part, by aggregating the relative rankings data.

51. (Original) The system of claim 50, wherein, for each individual set of client demand feedback data among at least a portion of the individual sets of client demand feedback data comprising relative rankings data, a first portion of the relative rankings data comprises relative ranking inputs provided by one or more users of the client system from which that individual set of client feedback is received and a second portion of the relative rankings data are automatically generated by that client system based on data stored on that client system that are indicative of content preferences of said one or more users of that client system.

52. (Original) The system of claim 50, wherein a current set of meta-data corresponding to a set of pieces of content considered for an upcoming broadcast is broadcast as a continuous stream that is repeated and includes a respective content descriptor for each piece of content included in the set of pieces of content, and wherein at least a portion of the individual sets of client demand feedback data includes a ranked list expressing a relative interest in all of the pieces of content in the set of pieces of content.

53. (Original) The system of claim 44, wherein the first communication link comprises a satellite broadcast link and the second communication link comprises a telecommunications link.

54. (Original) The system of claim 44, wherein the first communication link and second communications link comprise a bi-directional cable system link.

55. (Original) The system of claim 44, wherein the first communication link comprises a satellite broadcast link and the second communication link comprises a computer network communications link

56. (Original) The system of claim 44, wherein the first communication link and the second communications link comprise computer network communications links.